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Recognizing sustainability frontiers in the peri-urban

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Introduction

This article is concerned with the need to recognize the peri-urban as a frontier of urban sustainability, and to build a deep engagement with the processes of peri-urbanization into formal structures, governance arrangements, and other decision making processes in order to realize urban sustainability transformations.

Those of us who are concerned with the peri-urban can take some comfort in a noticeable shift in policy discourse. Until quite recently there had been little regard for the peri-urban. This has been apparent in my own experience. When we initially sought official engagement in our studies to look at threats to peri-urban agriculture and associated livelihoods in the late 1990s, there was limited interest. It took intensive empirical studies, which proved that the majority of perishable vegetables reaching wholesale markets in Delhi and Varanasi were from districts adjoining the municipality (Bhupal et al. 2002; Marshall et al. 1999), to provoke any attention. We then demonstrated the contamination of this produce with heavy metals from unregulated peri-urban industries (Marshall et al. 2004; Sharma et al. 2008). The results caused a media splash, and suggestions of remedial action to address the contamination in parliament. Yet there was little engagement with the key underlying issues that require a move away from a crisis-responsive mode to considering the important interactions between alternative possible urban development trajectories, changes to the peri-urban environment, and the multiple impacts on livelihoods and health.

Now there is an increasing appreciation of the significance of the peri-urban. While decisions relating to the peri-urban still appear to be driven largely by land markets and private investment opportunities (for examples, see Dutta 2012, Narain 2009), the importance of peri-urban natural resource management is beginning to gain traction. This is particularly so in terms of peri-urban food production (Zeeuw & Dreschel 2015).

Development policy and theory are also beginning to understand the need to tackle poverty in relation to urban expansion and its fringe areas. But to support sustainable urban development and to address issues of social justice, they must be closely linked to urban pressures on ecosystems. This includes an understanding of the politics and local power relations that result in differential access to urban environmental resources and the implications of adverse effects of urban environmental change (Allen 2014; Vij & Narain 2016). It must also involve reframing of both rural and urban-based understandings of development. This means that there is a need to look beyond the boundaries of cities and focus on the processes of urbanization that are occurring in the peri-urban. That is to say, to develop an understanding of the social, cultural, environmental, and economic dynamics of providing food, water, and energy across the rural-urban continuum.

Periurbanization and sustainability

Peri-urban was, and often still is, regarded as a process. This is linked to particular ideas of transition zones, where the retirement of rural activities is inevitable and therefore requires little attention. It might also be described as a periphery, which in the context of exclusionary urbanization processes plays out both in geographic and sociological terms. Also it might be looked at as a site of expulsion from the city, to make way for visions of modernity. Occasionally it might be seen as a threatening urban fringe, where communities become associated with health and environmental hazards that require some form of control (Marshall et al. 2005).

As time goes by, patterns of peri-urban exclusion and environmental degradation are reinforced. This has been exemplified in our own work over two decades. As part of our early research studies, a participatory research team led by the late Neela Mukherjee worked with 1200 farmers across 24 villages in the NCR and in Varanasi in the late 1990s (Mukherjee 2001). We were concerned with nature, the extent and significance of peri-urban agriculture, the constraints on peri-urban

agricultural livelihoods, and the impact of environmental degradation of air and water resources on them.

Concerns over lack of infrastructure and agricultural support were paramount among the farming communities involved at that time, along with the water shortages linked to energy supply and air pollution. But there was also hope for new urban employment opportunities and recompense for agricultural land thanks to rising prices.

The villagers were also asked about what they thought the future would bring (Marshall et al. 1999). On reflection, it appears that the dismal scenario that many of these communities feared, is being realized in many ways.

Our recent studies in Ghaziabad and Varanasi demonstrate increasing groundwater contamination from local industries and landfill sites, increasingly hazardous strategies that have to be employed to access water, and traditional uses of waste-water for irrigation and groundwater to support dairy herds facing new chemical food safety hazards, all affecting peri-urban and urban residents. (Randhawa & Marshall 2014) There is a plethora of other concerns including loss of diversification in agricultural products, lack of access to grazing land and other community resources, increasing social fragmentation, and limited access to employment, due to very low wages accepted by incoming migrants in local industries. (Unpublished ESPA project report)

A growing body of peri-urban literature is providing insights into the multiple interacting drivers that are contributing to this disappointingly widespread scenario. We are also learning much about local power relations, politics, institutions, and governance arrangements, and how they contribute and respond to the situation faced by peri-urban dwellers in various income groups.

Multiple government schemes, as they unfold –often under the banner of sustainability–, further tend to exacerbate peri-urban inequalities. For example, by creating exclusive city forests and recreation parks at the expense of community farms, agricultural land, or by developing industrial enclaves away from the middle-class areas of the city.

Of course there are multiple interacting social, political, and economic reasons for it. These include the fact that planning is heavily influenced by land markets and the drive to attract foreign investors, the continued drive to promote cities as engines of economic growth, and environmental management initiatives, with stretched resources, focussing largely on monitoring and emission norms.

The question is how the debates might be reframed such that critical peri-urban areas are recognized as frontiers of sustainability and urban development. What sort of new knowledge and understanding are still required, and what sorts of partnerships and alliances have potential to make an impact?

As peri-urban researchers, we are often asked how we could begin to engage with ideas of 'sustainability' in such transitional places, for it appears to some as contradictory. Yet it also appears that denial of sustainability in relation to the peri-urban is a major contributor to the ongoing processes of exclusionary urbanization. It is also a barrier to building resilient or sustainable urban food, water, and energy systems, which are now prevalent in national and international policy discourses.

As a working definition we have been considering the peri-urban as a condition that encompasses aspects of rural and urban activities and institutions, influenced by rapid social, environmental, and technological changes and increasing marginalization.

But we also recognize peri-urban areas as hot spots of social learning and innovation, and as frontiers of transition and transformation. They are the places where the dynamics of sustainability are being worked out in conflict, through negotiation, or through chaotic evolution.

Here we find an extreme set of perspectives, heterogeneous societies with widening inequalities, and clashes of tradition with modernity. These poorly studied situations provide excellent opportunity to learn the lessons of recent urban development interventions and their implications for the environment, health, and social justice.

We have also a great deal to learn from these situations about adaptation to social and environmental change. Perhaps the rapid innovations that are necessarily undertaken by peri-urban residents provide vital current day lessons for other circumstances, such as adaptation to climate change.

A growing body of peri-urban literature also indicates that greater insights into these peripheries, which are subject to ambiguity, informality, and illegality in the context of formal planning processes, can elucidate alternatives to dominant planning and management trajectories.

Through a long-term set of transdisciplinary initiatives working with peri-urban communities, we have been examining how urbanization processes and particular technological interventions unfold in peri-urban settings and the implications for the environment, multiple dimensions of poverty, and social justice. We have sought to enhance understanding of the interdependencies and trade-offs that occur, when diverse stakeholders prioritize, gain access to, and utilize food-water-energy and environmental resources. And we have looked at implications for the health and livelihoods of vulnerable communities (particularly those of the poor).

Further, we have been trying to understand the wider implications of these particular peri-urban socio-ecological system dynamics and their outcomes for residents, of all income groups, in the urban core and rural hinterland. For example, how the lack of attention to the degradation of the peri-urban environment and its links to human well-being also undermines the ability to develop sustainable urban water and food systems.

Urban policies for the provision of essential services such as food and water draw upon ecosystem services from the peri-urban zone and from even further afield. At the same time, the export of polluting activities and domestic waste to peri-urban localities degrades these ecosystem services, with adverse implications for urban and peri-urban communities.

This in turn has multiple adverse impacts on the urban core and rural hinterland. For example, through the emergence of new health hazards such as the transfer of contaminated food and water to urban populations, and the deepening of exclusionary processes of urbanization.

But there is also immense opportunity in building synergies across the urban-rural continuum such as with urban waste management. For example, with appropriate support for community based initiatives, and financial incentives to produce compost, considerably more urban waste in Indian cities could be put to productive use in urban and peri-urban farms –preserving soil structure and fertility and potentially reducing water demand. This is just one of many examples where, with appropriate support, safe and productive peri-urban agriculture could support sustainable urban development.

For water we find that important linkages between water, health, agriculture, and the environment are also disregarded, while invisible/informal/illegal water uses are ignored. This can result in policies that completely fail to address emerging and growing threats to human health (such as through the use of contaminated waste-water). An issue that is very apparent in the limited choice of chemical contaminants that are regularly monitored.

There is also a need to re-conceptualize notions of risk, quality, and waste in dynamic peri-urban localities. While peri-urban farmers see waste-water as a resource, the formal system completely separates issues of waste-water supply and water disposal. While the concept of the 'food-water-energy nexus' (as initiated by the World Environment Forum in 2008) is seen as holding potential for integrated planning for water, food, and energy, critics warn that the current approach is dominated by particular, powerful interest groups, and technocratic and managerial solutions. Therefore, there is need to elucidate the inter-linkages in the context of sustainable urban planning through widening and deepening the content of 'the nexus' and the dimensions it addresses, including environmental health and multiple dimensions of poverty.

This means engaging with local practices, alternative forms of knowledge and technologies, and understanding of ecology from the perspectives of diverse socio-economic groups. Through an enhanced understanding of nexus interactions both in the peri-urban and across the rural-urban continuum there is tremendous potential to build positive synergies. These synergies will support multiple sustainable development goals (for example, enhanced access to safe and nutritious food for the urban poor), and integrated city-region planning approaches.

The mechanisms for realizing these urban sustainability transformations need far greater attention. Integration of diverse knowledge and experiences of urban nexus interactions into decision-making processes could make significant contributions. This would help open up new pathways of development that built upon the skills, ideas, and experiences of diverse

stakeholders who are generally absent from formal decision-making processes, and would bring together often divergent initiatives.

Local innovations, new engagements across the formal and informal sector, and social and political mobilizations, often in informal settings, have already resulted in the emergence of multiple alternative practices. These have potential for enhanced social justice, environmental integrity, and synergies across the urban-rural interface. There may also be alternative forms of the 'smart city' associated with diverse technology options. For example, through the development of appropriate local, low-cost community-based environmental monitoring, and networks for mutual learning about social innovations that promote positive nexus synergies in the peri-urban.

A development of this sort of approach would also suggest that, alongside support for local innovation, there is a need to establish development indicators and planning tools relevant to the specific challenges of transitional spaces. There is also a need to engage with sectoral policies and programmes such as the socio-material flows of food, water, and waste across the rural-urban continuum together with multiple dimensions of poverty.

It is also important to work towards planning approaches that make crucial links between the disparate policy fields of environment, health, agriculture, and urban planning. Ultimately, a constructive dialogue that engages with new approaches and new politics of city-region planning is essential. This would involve the firm integration of peri-urban landscapes, environmental change ecosystem services, and health systems into the planning frame.

These issues, as with all key sustainable-development challenges, cut across disciplinary and sectoral divides and policy siloes. There is immediate need to find some means of supporting trans-disciplinary co-operation for the understanding of urban/peri-urban sustainability dynamics in particular settings.

While some excellent, new interdisciplinary university programmes are emerging, there is much more to do. Alliances between the formal and informal sector are crucial, and there are important lessons from emergent urban alliances, for example in the waste sector. It is also crucial to continue to build alliances across environment, health, water, and other domains in education and formal policy circles to continue to raise awareness, challenge, and promote dialogue around alternative technologies and planning approaches.

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